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## PATENT ABSTRACTS OF JAPAN

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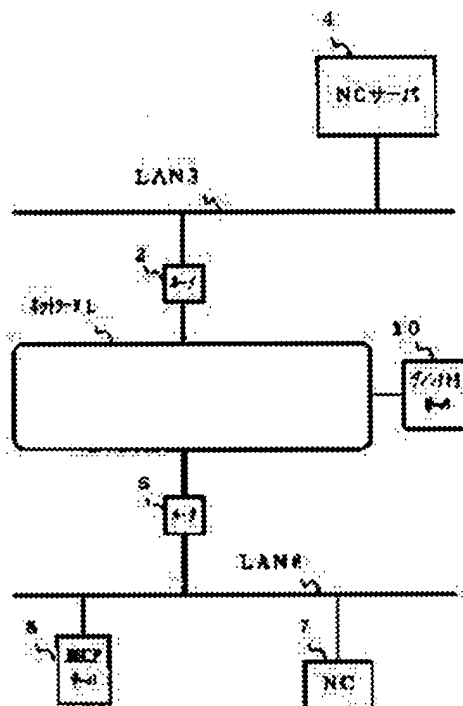
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### (54) NETWORK COMPUTER SYSTEM AND BOOTING METHOD BY NETWORK COMPUTER

(57)Abstract:

PROBLEM TO BE SOLVED: To enable booting of a basic program, even when a network computer (NC) and an NC server do not exist on the same network.

SOLUTION: A DHCP server 8 of this network computer system is connected to the same LAN 6 as an NC 6, an IP address is allocated to an NC 7 corresponding to an IP address acquiring request received from the NC 7, and the IP address of a directory server 10 of another network 1 is returned. At start time, the NC 7 broadcasts the IP address acquire request, makes access to the directory server 10, while using the IP address returned from the DHCP server 8 corresponding to the request, acquires the IP address of an NC server 4, accesses the NC server 4 on a LAN 3, while using the provided IP address and boots the basic program.



LEGAL STATUS

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]**

**[0001]**

**[Field of the Invention]** This invention connects a server and a network computer on a network, and a network computer is related with the boot approach by the network computer system and network computer which boot a basic program (Following OS is called), for example, an operating system, from a server at the time of a startup.

**[0002]**

**[Description of the Prior Art]** The conventional network computer system consists of a router 103 which connects subnets, such as a different network 101 and 102, for example, LANs etc., the network computer 104 (the following NC 104 is called) and the NC server 105 which were connected on LAN101, and NC106 and the NC server 107 which were connected on LAN102, as shown in drawing 2.

**[0003]** In case it starts in the case of [ 104 ] this system (for example, NC on LAN101), an IP address income demand is published from NC104. Then, the NC server 105 on LAN101 receives on the same network that is, and the IP address income demand assigns an IP address to NC104, for example, is making basic programs, such as an operating system (Following OS is called), boot from the NC server 105. Boot actuation of OS in the same network is performed like [ the LAN102 side ] the above.

**[0004]** By the way, since the IP address income demand published from each NC104,106 in this case at the time of starting is not transmitted every time it exceeds a router 103, since network addresses differ, it needs to prepare the NC server 105,107 for a subnet unit.

**[0005]**

**[Problem(s) to be Solved by the Invention]** Thus, when NC server needed to be prepared per subnet, NC server must also be extended in the conventional network computer system whenever it extended LAN, and program modification of a basic program occurs, there is a problem that the things (simultaneous modification etc.) for which the synchronization of a program change is taken by each NC server are very difficult, and there is a possibility that the basic program from which a version differs between the network computers of each network may be booted.

**[0006]** It was not made in order that this invention might solve such a technical problem, and even if a network computer and NC server do not exist on the same network, it aims at offering the boot approach by the network computer system and network computer which can boot a basic program.

**[0007]** Moreover, this invention aims at offering the boot approach by the network computer system and network computer which can take the synchronization of a program easily, when program modification of a basic program arises.

**[0008]**

**[Means for Solving the Problem]** In order to attain the above-mentioned purpose, the network computer system of invention according to claim 1 NC server which was connected on the network and stored the basic program at least, The directory server which registered the IP address of the device which is connected on a network which is the same as said network, or is different, and is connected to the

network of each oneself and others, While connecting on a different network from said network and broadcasting an IP address acquisition demand at the time of starting Said directory server is accessed using the IP address answered to said IP address acquisition demand. The network computer which acquires the server information for booting said basic program, accesses said NC server using the acquired server information, and boots said basic program, As opposed to the IP address acquisition demand which was connected on the same network as said network computer, and received from said network computer While assigning an IP address to said network computer, it is characterized by providing the DHCP server which answers a letter in the IP address of said directory server.

[0009] The network computer system of invention according to claim 2 The directory server which was connected to the 1st network and registered the IP address of the device on a self-network and other networks, NC server which was connected on the 2nd network connected to said 1st network through the 1st router, and stored the basic program at least, While connecting on the 3rd network connected to said 1st network through the 2nd router and broadcasting an IP address acquisition demand at the time of starting The directory server on said 1st network is accessed using the IP address answered to said IP address acquisition demand. The network computer which acquires the server information for booting said basic program, accesses NC server on said 2nd network using the acquired server information, and boots said basic program, As opposed to the IP address acquisition demand which was connected on said 3rd network and received from said network computer While assigning an IP address to said network computer, it is characterized by providing the DHCP server which answers a letter in the IP address of said directory server.

[0010] The boot approach by the network computer of invention according to claim 3 In the boot approach by the network computer connected to the network The process which broadcasts an IP address acquisition demand on said network at the time of starting, The IP address which the DHCP server on the same network assigned to said network computer to said IP address acquisition demand, The process which receives the IP address of the directory server on other networks, The process which acquires the server information for accessing the directory server on other networks using said received IP address, and booting a basic program, It is characterized by having the process which accesses NC server on other networks using the acquired server information, and boots said basic program.

[0011] If a DHCP server is prepared on the same network as a network computer in invention of claim 1 and three publications and there is an IP address acquisition demand from a network computer When a DHCP server notifies the IP address of the directory server on the network where others differ A network computer is obtained by accessing information required for boot of a basic program at the directory server of other networks. Consequently, even if it exists in the network where a network computer differs from NC server, a network computer can boot the basic program of NC server.

[0012] In invention according to claim 2, a network computer broadcasts an IP address acquisition demand on the 3rd network at the time of a startup. If the IP address which the DHCP server on the same network assigned to the network computer to this IP address acquisition demand, and the IP address of the directory server on the 1st network are received Since the IP address of the server information for accessing the directory server on the 1st network using the received IP address, and booting a basic program, i.e., NC server of the 2nd network, is acquirable The network computer on the 3rd network can be accessed to NC server on the 2nd network exceeding a router using the IP address of NC server obtained in this way, and can boot a basic program.

[0013] By constituting a system as mentioned above, even if a network computer and NC server do not exist on the same network, a basic program can be booted. Moreover, even when program modification of a basic program arises, the change of a program can be performed only by making a program change of the basic program stored in one NC server, and the synchronization of program modification of each network computer can be taken easily.

[0014]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained to a detail with reference to a drawing.

[0015] Drawing 1 is drawing showing the configuration of the network computer system of one

operation gestalt concerning this invention.

[0016] In this drawing, 1 is the 1st network. The directory server 10 on a self-network and other networks which registered the IP address of a device altogether is connected to this network 1.

[0017] LAN3 as the 2nd network is connected to this network 1 through the 1st router 2. On this LAN3, the NC server 4 which stored basic programs, such as an operating system, the network information on other, etc. is connected. Moreover, LAN6 as the 3rd network is connected to the above-mentioned network 1 through the 2nd router 5. On this LAN6, the network computer 7 (the following NC 7 is called) which stored the boot program in internal bootROM (not shown) etc. is connected. A boot program is a program which accesses the directory server 10 on a network 1 using the IP address answered to this IP address acquisition demand, acquires the server information for booting a basic program, accesses the NC server 4 on LAN3 using the acquired server information, and boots a basic program while broadcasting an IP address acquisition demand at the time of starting.

[0018] Moreover, to the IP address acquisition demand which received from NC7 on this LAN5, while assigning an IP address to NC7, the DHCP server 8 which answers a letter in the IP address of the directory server 10 is connected.

[0019] Hereafter, actuation of this network computer system is explained.

[0020] If the power source of NC7 is turned on in the case of this network computer system, the boot program stored in bootROM of the NC7 interior will start, and an IP address acquisition demand will be broadcast on LAN6.

[0021] Then, the DHCP server 8 receives the IP address acquisition demand from NC7 on LAN6, and to the IP address acquisition demand which received, while the DHCP server 8 assigns an IP address to NC7, it takes out the IP address of the directory server 10, and answers a letter as a part of network information.

[0022] NC7 will acquire the IP address of NC7 the very thing, and the IP address of the directory server 10 on a network 1 out of the received network information, if network information is received from the DHCP server 8 on same LAN6 as a response to an IP address acquisition demand.

[0023] Then, NC7 publishes the acquisition demand of the IP address of the information 4 which needs LAN6 to which self is connected in order to access through a router 5 to the directory server 10 of a different network 1 and to boot OS, i.e., NC server, using the IP address of the obtained directory server 10. NC7 which the directory server 10 which received this demand took out the IP address of the NC server 4 from self, answered NC7, and received this reply is accessed through a router 5, a network 1, and a router 2 using the IP address of the NC server 4 to the NC server 4 on LAN3 which is different in LAN6 to which self is connected, and boots OS.

[0024] The processing under the environment of the OS after booting OS with various NC7 is attained.

[0025] Thus, according to the network computer system of this operation gestalt When NC7 and the DHCP server 8 are connected to LAN6 and the DHCP server 8 notifies the IP address of the directory server 10 on a network 1 to the IP address acquisition demand from NC7 Even if it exists in the network where NC7 accesses information required for boot of a basic program at the directory server 10 of a network 1, and is obtained, consequently NC7 differs from the NC server 4, NC7 can boot the basic program of the NC server 4.

[0026] Moreover, even when program modification of a basic program arises by having constituted in this way, a program can be changed only by making a program change of the basic program stored in one NC server 4, and a program synchronization with other NC connected to the network which changes with these can be taken easily.

[0027] In addition, although the above-mentioned operation gestalt explained the configuration which connected NC7 to LAN6, NC7 may be connected to LAN3 same as usual as the NC server 4, and you may connect with a network 1, and NC7 is freely movable.

[0028]

[Effect of the Invention] According to this invention, as explained above, when a DHCP server is prepared on the same network as a network computer and a DHCP server notifies the IP address of the directory server on other networks to the IP address acquisition demand from a network computer, a

network computer accesses, can be obtained by the directory server of other networks, can access server information required for boot of a basic program at NC server using server information, and can boot a basic program.

[0029] Thus, even if it exists in the network where a network computer differs from NC server by constituting a system, a network computer can boot the basic program of NC server.

[0030] Moreover, even when program modification of a basic program arises, a program can be changed only by making a program change of the basic program stored in one NC server, and the synchronization of the program of each network computer can be easily taken by this.

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[Translation done.]